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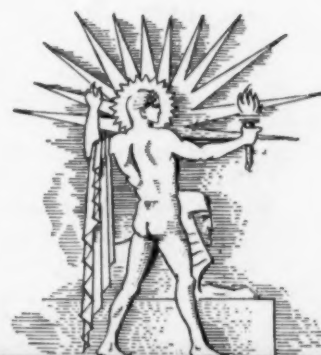
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JUL 8 - 1941

DETROIT

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •



July 5, 1941

Atom Sorter

See Page 9

A SCIENCE SERVICE PUBLICATION

Do You Know?

It takes seven years at the shortest to get a *rubber* plantation to the tapping stage.

The most powerful anti-aircraft *search-lights* can throw beams visible five and one-half miles.

Geologists are making special efforts to investigate *Alaskan* sources of nickel and other metals important to defense.

A canopy of glaring *lights* over a city would be better air raid protection than a blackout, one lighting engineer claims.

Careless handling of *eggs*, says a Cornell poultry scientist, caused loss of 175,000,000 eggs in 1939 in the United States.

Less than 150 years elapsed from the time when Egypt had its first *stone* masonry architecture until the great pyramids were being raised.

Unearthing ruins of a palace at Hamath, Syria, Danish archaeologists found many little baked clay rolls, believed to have served in fixing royal *curls*.

A number of cases of *gas poisoning* are reported among garage workers in Finland, where wood and charcoal gas generators have replaced gasoline motors.

With three miles of work completed in a year, scientists say that the 13-mile *Continental Divide tunnel* in Colorado may be finished in five years, instead of seven.

QUESTIONS DISCUSSED IN THIS ISSUE

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A recent survey shows 36,641 students studying *Spanish* in 121 universities in the United States.

British women with advanced *mathematical* knowledge are attached to combatant artillery units to take charge of range finders and prediction calculating machines.

During high altitude flying, going without food increases the fliers' *oxygen* needs, and it is found that carbohydrates such as sugar and plain chocolate bars require least oxygen in digestion.

Useful in making *sweetpotato* starch, a new machine cuts the potatoes into chips which can be dried readily.

Borrowing a gridiron idea, the U. S. Army is making *parachute troops'* uniforms of the tough, slick goods in football pants—smoothness helps prevent tangling with parachute lines.

Using a two-way speaker system, Iowa school districts are bringing school to more than 100 *crippled children* at home, so that they not only hear a teacher but can recite and be heard by the class.

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METALLURGY

New Process Purifies Aluminum From Alunite

Years of Research and Experimentation Unlock Domestic Source in Huge Deposits in Southern Utah

A NEW domestic source of aluminum for the United States has been unlocked after years of research and experimentation.

Alunite, a white rock usually gray or pink tinted, has long been known as a combined sulfate of potash and alumina. Huge deposits in southern Utah, largest in the world, were worked during the first World War for potash.

When the United States became self-sufficient for potash from other domestic sources, scientists sought a practical process to obtain from alunite the material alumina, raw source of all metallic aluminum. The present source of alumina is bauxite, of which the United States has limited deposits in the South and is mainly dependent on high-grade imports from British and Dutch Guiana.

The U. S. Bureau of Mines recently estimated that there were 13,788,675 tons of pure alunite in Utah, Arizona,

Colorado, California, Nevada and Washington, of which Utah has 11,680,000 tons.

Numerous patents have been issued on alunite processes, but all proved impractical in cost competition with bauxite until Kalunite, Inc., of Salt Lake City, after ten years of research and experiments in laboratory and pilot plant conducted by Dr. Arthur Fleischer, developed and patented the new process.

The Kalunite process produces alumina from alunite at a cost of \$35 a ton, which means metallic aluminum at 11.865 cents a pound. This will permit it to compete in cost with Bayer alumina (the process used by the Aluminum Company of America).

Experts report that the metal produced from Kalunite alumina is equal in grade to that produced from Bayer alumina. There are available in the Marysvale region in Utah at least

3,800,000 tons of ore that can be treated by the Kalunite process for the cost reported. The amount of ore is sufficient to assure a life of at least 10 years for a plant producing 200 tons of alumina a day.

The Kalunite method produces alumina by the dilute sulfuric acid process and also produces as a by-product potassium sulfate. In brief, the Kalunite process starts with the long-known method of producing potassium alum and potassium sulfate from alunite. The potassium alum is utilized in order to take advantage of its property of separation by crystallization from solutions.

The alum is then put into an autoclave, which resembles an ordinary kitchen pressure cooker except that greater pressures are used. In the autoclave the normal potassium alum is changed to basic alum which is insoluble in water or dilute sulfuric acid. The alum is then calcined to separate the sulfuric acid from alumina resulting in the non-chemical mixture of alumina and potassium sulfate. The latter is removed by leaching.

Science News Letter, July 5, 1941

GEOLOGY—ENGINEERING

Great Amphitheater Carved Out of Mountain

CARVED by nature out of the mountains is Denver's new open-air amphitheater in the Park of the Red Rocks, 14 miles southwest of the city in the foothills of the Rocky Mountains. The park is formed of the gigantic, up-thrust, ledges and crags of the old red sandstone, called Morrison sandstone locally, heaved up all along the eastern side of the Rockies by the gigantic forces that formed the mountains.

A slope, in a natural horseshoe between two of the great crags, Creation Rock and Ship Rock, descends to another crag that lay athwart its foot. The weathered convolutions of the latter, eroded and shaped like some gigantic marine shell, soften sound and send it swelling in golden notes up the slope, an effect that has long been noted.

At the base of this gigantic natural sound-board a giant stage has been built, about 175 by 75 feet, and up the slope have been constructed seats for 10,000 people—so wide apart that 20,000 can be seated by bringing in camp chairs between.

Original planner of the theater is George E. Cranmer, manager of parks and improvements in Denver. CCC



ROOMY

The size of the mountain theater is well indicated in this Lowry Field official aerial photo.



NATURAL

Nature built the scenery for the stage of Denver's new mountain amphitheater in the Rocky Mountains, as shown in this photograph by Harry M. Rhoads.

company Ma-lc, has labored for four years at the theater, under direction of National Park Service officials—Edward Teyssier, supervisor of all Denver Mountain Park projects, and Albert C. Dice, in direct charge of the theater.

It was an immense job. Between 40,000 and 50,000 cubic yards of dirt had to be moved; the whole structure

is of reinforced concrete or natural stone. Colorado evergreens are planted in stone boxes on the side; there are elaborate dressing and preparation rooms, an elaborate lighting system.

"If there are people here 3,000 years from now, the theater will be here for them to enjoy," said a national park official.

Science News Letter, July 5, 1941

ASTRONOMY

New Van Gent Comet Won't Be Seen With Naked Eye

Will Be Brightest in Early September When It Can Be Seen With Small Telescope Moving Toward Dipper

HOPES that the new Van Gent Comet (*See SNL*, June 21), which is moving into the northern sky after its discovery by an astronomer in South Africa (not in Java, as first reported), will become visible to the naked eye are not to be realized.

This is shown by a calculation of the comet's path made by L. E. Cunn-

ham, of the Harvard College Observatory who discovered Cunningham's comet which did reach naked eye visibility last winter.

Dr. F. J. Bobone, of the Argentine National Observatory, calculated the comet's path in space. These data, transmitted to the Harvard College Observatory, clearing house for such astro-

nomical news, were released by Dr. Harlow Shapley, director of the Harvard Observatory.

Dr. Bobone's orbit brings the comet closest to the sun on Sept. 3, when it will be about 89% as far from that body as the earth's distance, 93,000,000 miles. Seen from the sun, at that time, it would be in our northern constellation of Draco, the dragon. However, from earth we will see it in a different direction.

When discovered, the comet had a short tail, and was of the eleventh magnitude, far below the fifth magnitude, the minimum for naked eye visibility. On June 16, according to Mark Howarth, New South Wales astronomer who radioed to Harvard, it had increased to the tenth magnitude.

Mr. Cunningham's figures, based on the data computed by Dr. Bobone, reveal that in mid-July the comet will pass just below the bright star Arcturus, visible in the southwest in the evening in the constellation of Bootes. Then it will move towards the figure of the Great Bear, and in October will be a short distance below the bowl of the Big Dipper.

At the present time it is approaching the sun, which increases its real brilliance, but it is moving away from the earth, which partly counteracts the rise in brightness. On July 1 it will be about two-thirds of the sun's distance from us, or 60,000,000 miles. It will be about 130,000,000 miles distant on Sept. 3, when closest to the sun. After that, it will get closer until Dec. 8, when it will be 74,000,000 miles away, but by that time it will be well outward bound from the sun.

In early September it will appear brightest, Mr. Cunningham finds, when it will reach magnitude 7.5, not enough to be seen with the naked eye, but visible through small telescopes if one knows just where to look.

Astronomers at the Yerkes Observatory, Williams Bay, Wis., and the U. S. Naval Observatory in Washington have observed Van Gent's comet. Dr. George Van Biesbroeck, at Yerkes, picked it up on June 18.

Using the 26-inch refracting telescope at the Naval Observatory, U. S. Lyons found it on the night of June 19 in the constellation of Libra, the scales, which is visible in the south about midnight. A photographic record of the comet was also secured by G. M. Raynsford, with the 10-inch star camera.

Science News Letter, July 5, 1941

Plastic fly screens are being tried out, and are said to resist corrosion.

PSYCHOLOGY

Army Ready to Start School For Military Psychologists

Twenty-Five Men With Professional Training Will Be Picked from Selectees Each Three Months

THE U. S. Army will soon have for the first time a school for military psychologists.

Following the example set by Germany as long ago as 1937, the U. S. War Department has now approved plans opening the gateway to this new career to a limited number of professionally and personally qualified selectees who want to fit themselves for the specialized task of selecting, classifying and interviewing soldiers.

Every three months, about 25 selectees will be chosen to attend the military psychologist school. Only those will be picked who have satisfactory previous professional training and the personal qualities and stamina considered essential to success as Army officers.

The selection will be made during the 13 weeks in which the selectee is getting his basic military training.

Then he will serve a period of four or five months of training in military psychology comparable to the internship period of the student physician. As an interne, he will assist classification officers and examiners in interviewing, examining, trade-testing and classifying recruits and in following up the work of soldiers who seem in line for re-classifying or transfer.

During his internship, the military psychologist will attend a central school for four weeks. Then he will go to the regular Officers' Training School for three months.

On graduation day, he will receive a commission in the Officers' Reserve Corps, Adjutant General's Section, and then will serve for a year of active duty as a personnel technician officer.

The plans for the military psychologists' school have been worked out by a Committee on Classification of Military Personnel formed in cooperation with the National Research Council, with Dr. Walter V. Bingham as chairman. They are reported in *Science* (June 13).

Details are also revealed of the Army's new "General Classification Test," which supplants the World War "Army Alpha"

psychological examination for the sorting out of soldiers on the basis of their mental ability.

"I.Q.," mental age, school-grade equivalents and other misused and misunderstood terms are blacked out by the new Army testing plans.

Scores on the new classification test will be in terms of standard deviation from the average attained by a representative sample of adult men of military age.

Mental power, and not just speed in intellectual gymnastics will be measured by the new test. Cryptic and puzzle-like questions are banned, as are also any that might look childish, bookish or schoolish to the mature men drafted for the Army.

It is planned to be a practical, sensible test that both officers and men will take seriously with confidence in its fairness and worthwhileness.

Advice of the Committee was followed in all steps in the preparation and use of the test, one form of which saw actual service as early as last November.

Science News Letter, July 5, 1941

NUTRITION

Livestock Feed May Be Made Out of Thin Air

WE MAY all presently be eating beef and drinking milk and wearing real woolen suits, all made out of thin air. This revolutionary suggestion is contained in two communications in the British journal, *Nature*, (May 3 and June 7) which have just been received in the United States. They were prepared respectively by Prof. R. Benesch of the University of Leeds and by Dr. E. C. Owen, Dr. J. A. B. Smith and Dr. N. C. Wright of the Hannah Dairy Research Institute at Kirkhill, Ayr, Scotland.

Fixation of the nitrogen from the air is an old story now. German chemists helped the German war machine to hold out a couple of extra years, in 1914-18, by turning atmospheric nitrogen into nitrates for explosives and fertilizers.

The new World War brings the idea

of feeding synthetic nitrogen compounds directly to livestock, instead of turning them into plant proteins by fertilizing the soil and then feeding the plant proteins to the animals. It is reported that this is already going on in Germany, and the English and Scottish experiments point the way toward doing it in other lands.

Most successful of the synthetics is urea or carbamide, a relatively simple compound containing carbon, oxygen, nitrogen and hydrogen. It is not directly digestible or assimilable by animals, but it seemed possible that the microorganisms living in their digestive tracts could work it up into such shape that it could be absorbed as food. Experiments, both in the stomachs of cattle and in glass laboratory vessels, give evidence that this actually happens.

Urea cannot entirely replace proteins of vegetable origin in livestock feed, but it can be substituted for a considerable part of the more expensive nitrogen of plant proteins. It apparently works most successfully in animals equipped with the special stomach compartment called a rumen, such as cattle, sheep and goats.

Science News Letter, July 5, 1941

CHEMISTRY

Chemical Treatment Makes Fabrics Mildew Proof

A NEW rot-proofing treatment for fabrics, expected to be useful in defense as well as peacetime applications, has been invented by a woman chemist in the U. S. Department of Agriculture, Helen M. Robinson of the Bureau of Home Economics. Miss Robinson's process is covered by a public service patent, so that it may be used freely by any one, on a non-exclusive basis.

The process consists in immersing the fabric first in a solution of a copper or cadmium salt, then in a solution of morpholine, which is a complex organic compound. The reaction takes place within the fibers of the fabric itself, thoroughly impregnating it and discouraging the growth of mildew and other rot-causing fungi. The goods is stiff at first, but regains its pliability upon drying. Color and texture are not affected.

Army officers have shown interest in the new process as means of lengthening the useful life of tents, tarpaulins and sandbags. Possible peacetime uses include treatment of shower curtains, awnings, sails and other materials attacked by rot fungi.

Science News Letter, July 5, 1941

CHEMISTRY

Hopes For Commercial Success In Taking Gold from Sea

Discovery That Electroplating Method Extracts Gold As Colloid, First Step Toward Practical Method

WITH \$25,000,000 worth of gold dissolved in each cubic mile of sea water, man has often sought a way of digging out this treasure. Using electrochemical methods, comparable to those used in electroplating, gold has actually been extracted from the ocean, but the rub is that, at best, the cost of the process is five times the value of the gold obtained.

Hopes that this may be reduced to the point where gold may be profitably extracted were raised by Dr. Colin G. Fink, of Columbia University, speaking before the Wilder D. Bancroft Colloid Symposium at Cornell University.

In electroplating, the metal in the plating solution is deposited on the cathode, the negative terminal. But when an effort is made to plate the gold out of sea water in this way, said Dr. Fink, the metal precipitates out rapidly, and fails to collect in the solid, crystalline form in which it is desired. By using a rapidly spinning cathode in place of the stationary one, it has been found possible to get a distinctly visible gold deposit. It is the cost of providing the spinning cathode that makes the method impracticable commercially.

In his search for the reason that gold

fails to deposit on the stationary cathode, Dr. Fink made the discovery that, when gold passes out of or into solution, two distinct steps are involved. Invisible dissolved gold first goes into myriads of minute particles of colloidal gold, and then later into the crystalline form of the metal. The stationary cathode fails because the metal precipitates out in colloidal form and drops away before crystallizing.

Now the problem remains as to how the colloidal gold may be converted into the metal crystals. Perhaps it can be accomplished with high voltage electric currents, or with bombardment of electrons. Dr. Fink plans to try these. In any event, he said, with due scientific caution, that "it is felt that, on the basis of the discovery, we have advanced one step closer to the commercial recovery of gold from sea water."

Aside from this, however, the discovery is of great theoretical significance, and has practical importance as well. For example, he said, it may hasten development of formulae for the electroplating of metals such as titanium and vanadium. In this way, it may have far-reaching commercial results whether the gold extraction is accomplished or not.

Science News Letter, July 5, 1941

PUBLIC HEALTH

Drafted Men Must Spend 6,000,000 Hours at Dentist's

ON the eve of the drawing of the next 750,000 selectees for America's defense army, complete data on the health status of the first 1,000,000 men called for army training were announced by the Selective Service System for the first time at the meeting of the American Medical Association in Cleveland.

Of the 1,000,000 whose numbers were drawn last fall, local boards and army boards rejected a total of 400,000 for med-

ical and health defects. This is about the same percentage as were rejected in the World War draft. Rejections and causes were as follows: 75,000 for defective teeth; 45,000 for defective eyes; 37,000 for diseases of heart and blood vessels; 31,000 for musculo-skeletal defects ranging from paralysis and crippling to loss of the index and next finger on the right hand; 28,000 for mental and nervous disease; 22,000 for defective hearing;

● RADIO

Thursday, July 10, 2:45 p.m. EST

On "Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Col. Paul Logan, Subsistence Branch, Office of Quartermaster General, U. S. Army, will tell how the Army solves its problem of packing food.

Listen in each Thursday.

18,000 for hernia; 16,000 for diseases of the lungs including tuberculosis; 15,000 for venereal diseases, 13,000 for defects of the feet.

Of the 400,000 rejected, 200,000 were totally disqualified for health reasons for army service. Another 100,000 with non-remediable defects such as poor eyesight or hearing could be assigned if necessary to limited service. The remaining 100,000 had defects or diseases which could be remedied. Selective Service System authorities are considering steps for rehabilitation of these men.

The much-discussed and frequently misunderstood tooth standards required before a man is inducted into army service state that the man must have at least 12 teeth, of which there must be three pairs of opposite upper and lower teeth for biting and three pairs of opposite upper and lower back teeth for chewing. Even with these standards met, it is estimated that Army dentists must spend between six and ten hours per selectee filling cavities in the 12 or more teeth of each man accepted for training, which totals some 6,000,000 hours in the dentist's chair.

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FOR FAIRNESS

The Electric Eye for recording jumps is adjusted by L. H. B. Peer, of the General Electric Research Laboratory. The four light sensitive cells are below his left hand.



OVER

The jumper cleared the bar by three inches—and got credit for it, with a new application of the electric eye for measuring jumps. Developed by General Electric engineers, it was tried out with great success the other day at a Schenectady track meet. Four parallel beams of light, an inch apart, are sent across from one upright to the other, and detected by photoelectric cells. The recording device tells which, if any, of the beams is interrupted by the jumper's body. Actually, no bar is necessary, though it helps the jumper by giving him a mark to aim for.

GENERAL SCIENCE

Soil Erosion More Destructive Than War's Havoc in Africa

Conservation Practices Begun Years Ago Fallen Into Disuse and Soil Is Eroded Down to Bedrock

NORTH AFRICA and the Near East, scourged for the thousandth time by war, have suffered even more during intervals of peace than from the havoc of actual armed strife. Partly because of war-caused paralysis of civil life, partly from internal disorder and weakness, soil-conserving practices begun by good farmers ages ago have been permitted to fall into disuse, and the impoverished soil has eroded to bedrock, Dr. W. C. Lowdermilk, of the U. S. Soil Conservation Service, stated in an address before the American Association for the Advancement of Science in Durham, N. H.

The world's earliest large-scale civiliza-

tions, in the Tigris-Euphrates and Nile valleys, have had diverse histories, Dr. Lowdermilk pointed out. The history of the land now called Iraq has had marked ups and downs. This is at least partly due to the fact that its agriculture depended on irrigation canals, which were at times permitted to silt up and become useless. For the past thousand years or more, the valley that was once the Garden of Eden has been in a "down" phase of its history, impoverished, underpopulated.

Egypt, on the other hand, has depended on the annual Nile flood for its irrigation, so that its only problems have

been much simpler ones of drainage, to prevent the water table from becoming too high and to eliminate saline deposits from certain spots in the soil.

Apparently the device of terracing sloping fields was first used by the ancient Phoenicians, in the fields on the mainland back of Tyre and Sidon, Dr. Lowdermilk said. As the necessities of the growing city populations pressed ever harder on the means of support, the stone-supported terraces were pushed ever higher up the hills. If the work had to be done at present-day wages the cost would be terrific.

Nevertheless, these ancient terraces have justified their existence. Where they have been well taken care of they are still functioning, after more than 2,000 years of use. Where they have been neglected and allowed to break down, the soil has slid into the valleys and choked the rivers, leaving the bare bones of the rock sticking out of the hillsides.

Dr. Lowdermilk drew a lesson for America from the history of these classic lands. Here, too, there has been neglect and wastefulness in land use, and soil erosion has got started at an alarming rate.

However, the speaker concluded, "this destructive force did not go unheeded. Far-sighted students of land foresaw the dangers of soil erosion. But it was not until experimental studies were begun by which it was possible to measure comparative losses of water and of soil under various types of cropping, slopes and climates, that the magnitude of the menace could be measured.

"On the basis of these researches, a nation-wide program of demonstration projects in erosion control and soil conservation showed the farmer and the technician alike how this enemy of civilization might be controlled. Out of these steps has grown a movement for conservation of land resources which was founded upon the lessons of the past and science of the present.

"Continued progress in this movement of conservation must be founded on the adaptation of the findings of research to problems in land use that become more and more intricate as the demands upon the land increase."

Science News Letter, July 5, 1941

Use Renewable Resources

LIVE on income, not capital; use renewable resources, rather than exhaust non-renewable ones. Such is the national policy that (Turn to page 15)

MEDICINE

**Choline, B Vitamin,
Prevents Liver Cirrhosis**

PREVENTION of cirrhosis of the liver in rats by choline, a chemical generally considered part of the vitamin B complex, is announced by Prof. E. V. McCollum and Dr. Harold Blumberg, of the Johns Hopkins School of Hygiene. (*Science*, June 20.)

Liver cirrhosis occurred in the rats when they were fed a diet containing large amounts of fat and only a small amount of protein food. Cirrhosis caused in this way was prevented by adding choline to the rat diet. The choline presumably owes its anti-cirrhosis action to its affinity for fats, "whereby it prevents the process of long-continued fatty infiltration" which is believed to lead to cirrhosis of the liver in diabetes and in chronic alcoholism in man.

The experiments reported by the Johns Hopkins scientists are the latest in a number of similar studies by many other scientists which all seem to point to lack of some diet constituent, presumably the vitamin, choline, as playing an important part in causing cirrhosis of the liver. Since the experiments have been made on laboratory animals and vary in some details of method and results, it is still too early to say how or whether they can be applied to prevention of liver cirrhosis in man.

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ARCHAEOLOGY

**CCC Boys to Bring to Light
Log Stockade Indian Town**

EXCAVATING a recently found log stockade built by Indians in Georgia, Government archaeologists expect to show modern America what an old Creek Indian town looked like.

A Presidential Proclamation authorizing addition of five acres of land to the Ocmulgee National Monument near Macon, Georgia, makes possible the excavations. CCC enrollees supervised by National Park Service archaeologists will do the work.

Post holes of the stockade are so well preserved that every log can be placed where the Indians had them, if the stockade is reconstructed. House sites of the Indian village are marked by little green plots of ground, different in texture from land that had no construction on it. Mounds that were landmarks of the ancient settlement are in evidence, and

also the archaeologists can make out the gaming grounds, where the Creeks played their favorite games.

Swamp-dwelling Indians lived at this site by the Ocmulgee River. National Park Service archaeologists believe that this was melting-pot Indian town, from such clues as hybrid art techniques used in making clay household goods. It appears that Indian migrants from the lower Mississippi invaded the Georgia area, and as a result of wars and tribal adoptions, mingled with the Creeks, as traditions of Creek Indians have maintained.

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PHOTOGRAPHY

**Photography Brings Out
Writing on Charred Papers**

IMPORTANT hand written documents blackened in fires started by the Nazi "Blitz" in London and other British cities are being deciphered by means of a photographic method (*Nature*, May 31), which takes advantage of differences in reflecting power between the blank spaces and the lines of writing. It was worked out by G. A. Jones of the research laboratories of Kodak, Ltd., at Wealdstone in Middlesex.

As seen by the human eye, the sheets are uniformly black. However, under intense lighting with a narrow beam from a small arc lamp, the once-white surfaces become mirrors, photographing white, while the traces of the ink lines have little reflecting power and photograph black. It is necessary, Mr. Jones emphasized, to press the blackened documents absolutely flat. Plates used in the camera had a special blue-sensitive emulsion, because of the high proportion of blue rays in the light from the arc.

Mr. Jones' method is of particular value in England, where many documents of legal importance, such as title deeds, wills, ledger sheets, etc., are still hand written.

Science News Letter, July 5, 1941

CHEMISTRY

**Outdoor Murals Made
By Airbrushing Lacquer**

MURAL paintings, especially for outdoor use, are now made with lacquer applied with an airbrush. The surface, like the finish of an automobile, resists rain or sun rays as the automobile does, and it may be washed like the body of a car. (*Arthur Kudner Inc.*)

Science News Letter, July 5, 1941

IN SCIENCE

PUBLIC HEALTH

**Kansas Rats Harbor Fleas,
Carriers of Plague**

ORIENTAL rat fleas, carriers of the plague that has devastated whole countries in the Far East through many centuries, have now become established in the heart of the United States, Prof. J. E. Ackert, H. P. Bolea and A. W. Grundmann of Kansas State College report. (*Science*, June 13). They have found the bloodsucking insects on Norway rats living in a city dump in Manhattan, Kansas, under circumstances that indicate ability to survive the severe winters of the West. They have been reported from other Midwestern states.

While the oriental rat flea gained its sinister reputation first as carrier of bubonic plague, it will be most dangerous in this country as carrier of sylvatic plague, a disease deadly to human beings, the three Kansas zoologists believe. Sylvatic plague is already known in several states of the West and Northwest, where it is harbored by wild rodents, and it is spreading eastward. The real danger will come when wild rodents carrying sylvatic plague make contact with Norway rats harboring Oriental fleas.

The impending hazard, the three researchers state, "makes it evident that steps should be taken to control this important pest."

Science News Letter, July 5, 1941

CHEMISTRY

**Now Plastic Reeds
For Jitterbug Bands**

PEOPLE who don't like swing music may have expected a lucky break with unsettled world conditions which threatened to cut off the supply of bamboo reeds for saxophones and clarinets. However, to their dismay, and the delight of the jitterbugs, fear of a shortage is eliminated, because the plastic reed has arrived. They are molded in five degrees of stiffness, and they can be washed without fear of warping them. (Plastic Reed Corp.)

Science News Letter, July 5, 1941

ICE FIELDS

PSYCHOLOGY

Forget How to Paint Fruits in Wartime England

PAINTINGS of fruit shown at England's Royal Academy this season are "lacking in juice and texture" because artists in wartime Britain have forgotten what fine fruit looks like.

The report that "there is no well-painted fruit this year because of the shortage," has reached here in the British scientific journal, *Nature*.

Dr. A. T. Hopwood of the British Museum of Natural History, who enjoys visiting British art exhibitions to see how agriculture and other sciences are portrayed by artists, also calls attention to pencil studies of old agricultural implements by Russell Flint, R.A.

"Not only are the drawings pleasing," says Dr. Hopwood, "but they are also of historical interest, for they represent a dying phase of agriculture."

A botanic jest is portrayed in "The Champion" painted by J. W. Tucker, which shows a monstrous cauliflower and the grower receiving homage of the city officials and news-reel men and the press.

Science News Letter, July 5, 1941

PHYSICS

Portable Atom-Sorter For Industrial Uses

See Front Cover

PHYSICISTS have known the "mass spectrometer" as a device for identifying isotopes, the different forms in which a single chemical element can exist, but now it may be put to work as an accurate, high-speed gas analyzer for oil refining and prospecting.

This is one of the possible industrial and scientific uses seen for a portable mass spectrometer, developed by Dr. J. A. Hipple, research physicist of the Westinghouse Laboratories. He is shown, at the device, on the cover of this week's SCIENCE NEWS LETTER.

The portable mass spectrometer sorts atoms and molecules by shooting them around a bend in a glass vacuum tube up to a million miles an hour. Just be-

fore they start, they are given an electrical charge. Then they pass through a chamber where high voltage acts on the electric charges and shoots the particles to the other end of the tube.

The curved part of the tube is encased in a powerful electromagnet which bends the paths of the atoms. The lighter the atom or molecule, the more its path is bent. At the other end of the tube the percentages of particles of different kinds are measured with electric meters.

Science News Letter, July 5, 1941

MEDICINE

New Sulfa Drug Effective With Less Discomfort

ONE of the new sulfa drugs, sulfadiazine, is as effective in pneumonia and other similar infections as the best of the older chemical treatments, but with less discomfort due to the treatment, three Boston physicians, Dr. Maxwell Finland, Elias Strauss, and Osler L. Peterson, have reported. (*Journal, American Medical Association, June 14.*)

Toxic effects were relatively mild and infrequent, only 9.2% becoming nauseated.

Sulfadiazine was used in the treatment of 446 patients with various infections. It appeared to be highly effective in the treatment of the following diseases: pneumococcic, staphylococcic and streptococcic pneumonias; meningococcic infections; acute infections of the upper respiratory tract including sinusitis; erysipelas; acute infections of the urinary tract, particularly those associated with *Escherichia coli* bacilluria, and acute gonorrheal arthritis.

Science News Letter, July 5, 1941

INVENTION

Invention Stops Horn Of Parked Automobile

WELCOME to all those who desire a quieter world is a newly patented invention to curb the activities of that prize pest who honks his automobile horn instead of getting out and ringing the doorbell. It consists of a spring operated switch in the horn circuit, which is open until the vibration of the moving car closes it. Thus he has full use of the horn when the automobile is moving, but it is automatically disconnected with the car standing still. (*General Motors.*)

Science News Letter, July 5, 1941

NUTRITION

Irrigation May Affect Potato's Tastiness

IRRIGATION practices may affect the mealy tastiness of potatoes, two Cornell University nutritionists, Betty A. Collins and Dr. Marion Pfund, reported to the American Home Economics Association meeting in Chicago.

As a test, they introduced water into raw potatoes mechanically by vacuum treatment and found that the outer portion of the potato lost in mealiness.

This suggests, they explained, that irrigation practices may need to be controlled to avoid undesirable decreases in mealiness.

Science News Letter, July 5, 1941

ENGINEERING

Glass Tires Running On Glass Bridges Foreseen

WITH tires containing glass you may be driving over bridges made partly of glass a few years from now.

New super-highways, like the Pennsylvania Turnpike, which make possible sustained speeds of as much as 75 miles per hour, may result in a new kind of tire. Already experiments are being made with thin light tires, especially adapted for such use. Older tires, with their thick, heavy tread are torn apart by the centrifugal force. Glass, as well as steel and other materials are being tried for tire cords, to give the strength needed to offset the decreased thickness.

Also, word has been received from England, of the use of glass as reinforcement for concrete. Developed first as a replacement of steel in wartime construction, the inventors, John A. Lincoln and A. W. Soden have expressed the view that all ordinary loading can be safely carried on glass-reinforced spans, for bridges or other structures, up to 20 feet, and that further studies may increase this to 40 feet.

Science News Letter, July 5, 1941

INVENTION

Glass Tarpaulin Used To Cover Cruiser Tender

GLASS TARPAULINS are used to cover the tender in a recently built fishing cruiser. They are made of glass fiber, which is not affected by water, and is lighter in weight than canvas. (*Bureau of Industrial Service, Inc.*)

Science News Letter, July 5, 1941

CONSERVATION

Hemisphere Protection

All But Three of 21 Republics in the Americas Sign New Agreement; Trade in Wild Bird Feathers Banned

By DR. FRANK THONE

TWO BIG things have happened recently for the good of the birds and beasts and plant life of the two Americas.

One is hemispheric in its scope. It is the conclusion of a convention or agreement, to be participated in by all the nations of the New World, for the protection of wildlife of all kinds and for the establishment of national parks and similar scenic areas for the enjoyment and education of the people.

The other concerns the United States more particularly. It is the establishment of a legal setup that is expected to put a final stop to the reckless killing of rare species of birds to get plumes for the millinery trade.

The two together represent an impressive advance in the protection of wildlife in both continents, whose beauty in nature is becoming increasingly appreciated by everyone, as vacations and travel become more generally possible.

The Pan-American Convention for Nature Protection was signed by Secretary of State Hull and representatives of a number of South and Central American republics last Oct. 12—anniversary of the day whose dawn showed Columbus the blossoming shores of a New World. In a little over half a year, all but three of the 21 American nations have added their signatures—very fast action, as diplomatic proceedings go. El Salvador was the first republic to sign; the United States was second. Most recent signer is Argentina, on May 19. In time, unanimous acceptance is expected.

Not Hard and Fast

There is nothing hard-and-fast about the document. It does not bind the agreeing parties to any course of drastic action; indeed, it does not have the force of law or treaty at all. It simply outlines a course for future action, each nation undertaking to carry out its part with its own means and strictly within its own sovereignty.

Each of the signing nations agrees to set up certain protected categories. Some of these are fairly familiar to most Amer-

icans. National parks are provided for; and the national park concept has been pretty well and rather generally understood since the first one was established in 1872 as the Yellowstone National Park.

A second category is designated as National Reserves. These will combine features of the national forests and the wildlife sanctuaries, already familiar in this country. In them, conservation will be combined with regulated use of natural resources.

Diametrically opposite is the idea governing the third category, called Strict Wilderness Reserves. As defined in the Convention, such a region is to be "under control characterized by primitive conditions of flora, fauna, transportation and habitation wherein there is no provision for the passage of motorized transportation and all commercial developments are excluded."

There is also a clause providing for the protection of migratory birds whose travels take them across international boundaries. It often happens that birds well protected in one country are exposed to wholesale slaughter in another.

First step toward the remedy of this situation was taken by Canada and the United States in 1916, in the Migratory Bird Treaty. Mexico has recently become a party to the same treaty, so that the safety of migratory birds, especially ducks and geese, has been greatly increased throughout the whole of North America. More time will be required to extend the system over South America because of the larger number of nations there and the greater complexity of conditions generally, but eventually all the peoples of the southern continent will doubtless wish to gain its benefits for their own wild birds.

An idea new to the United States is introduced in the inclusion of a category known as Nature Monuments. This is defined as "regions, objects, or living species of flora or fauna of esthetic, historic or scientific interest to which strict protection is given." It will thus be possible to designate as a "monument" such highly movable objects as all trumpeter swans, or all grizzly bears, or such widely distributed things as all fringed gentians or all trailing arbutus plants. Such monuments will be where they are found, not where they have been put.

It is not expected that all this program will be carried out immediately,



THE LAST STAND

Muskoxen form defensive rings, like ancient Roman legions, when threatened. All of the muskoxen left in the world are now the wards of the United States and Canada, since this country has undertaken the protection of Greenland until that frozen sub-continent (with its rare animal herds) can be returned to the post-war Danish Government.



MARTYRS OF FASHION

Real aigrettes are almost as unfailing a symbol of the wealth of the wearer (or her husband) as an ermine wrap. But to get them involves butchering family groups like these, and leaving the young to die of starvation and thirst.

especially in view of the imperative pre-occupation of all the Hemisphere nations with the menace of aggression from overseas. However, the terms of the Convention agree that each signatory power will set up what is possible now, and designate definitely appropriate areas and species for future action when that becomes possible.

One thing has been undertaken for immediate action. This is the submission by the various nations of lists of specially protected species, which are not to be admitted as imports by the other nations except as accompanied by export permits. Thus far only three of the nations have prepared such lists: Bolivia, Brazil and the United States. Others, however, are expected.

The Bolivian list includes 21 animal species and nine plants. Brazil's list is very much longer, covering some scores of species. Only ten names appear on the list of the United States: woodland caribou, sea otter, manatee, trumpeter swan, California condor, whooping crane, Eskimo curlew, Hudsonian godwit, Puerto Rican parrot and ivory-billed woodpecker. All these are very rare, even to the point of threatened extinction. These lists are looked upon as flexible, and subject to change as conditions war-

Without waiting for international action, or indeed for any treaties or laws at all, conservation and commercial interests got together in New York and reached an agreement among themselves to make an end for all time of all traffic in the United States in wild bird plum-

age of any kind from any source. This was the gist of a declaration of policy signed by the National Audubon Society and the Feather Industries of America, Inc.

It was followed quickly by a bill embodying the mutual wishes of both organizations, passed by the New York state legislature and signed on April 18 by Governor Lehman. This is looked upon as a model bill, and it is hoped it will be one of the first in a whole series of similar acts by other states and by the federal government. New York of course is an exceedingly important state in this connection, because of its outstanding position as a world fashion center and because so much of the country's feather trade centers there.

In order not to work hardship upon dealers who now have large stocks on hand, or commitments which cannot be abrogated, a period of six years is permitted for liquidation of the wild-bird feather trade. During this time dealing may take place in inventories now existing, but no new additions are to be made. In the spring of 1947 the law provides that all remaining wild bird plumage, except that in personal use and not for sale, shall be turned over to the State Conservation Department for destruction or for distribution to educational institutions for exhibition purposes.

The Feather Industries of America, Inc., with membership including at least 90 per cent of all manufacturers and

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dealers in wild bird plumage, has placed on inventory all storks now in existence, and all this plumage has been placed in storage. Strict control should therefore be possible, the more so since the legitimate trade is keenly interested in the suppression of bootlegged plumage originating with poachers.

One exceedingly important and self-sacrificing thing was done by Feather Industries. They agreed to the immediate sacrifice of several classes of feathers that have long been an especially severe source of grief to conservationists: egret, heron, bird-of-paradise, and bald and golden eagle. Of course, a society matron possessing an aigrette may continue to wear it without breaking the law. But the thing has automatically become old, passé, dated. The chances are that in far less than six years aigrettes will be as scarce on ladies' heads as elk-tooth watch-charms are on the vests of B.P.O.E. members.

Some humorous situations have arisen as a result of the new plumage legislation. An officer of the Audubon Society repeats a story told him by a socially prominent woman of his acquaintance. She was stopped on the street by a policeman, who was evidently also something of an ornithologist. He asked her if she knew what kind of a feather that was, in the new hat she was wearing. She admitted she didn't know.

"Well," said the officer, "that's an eagle feather, a golden eagle feather, and it's against the law to buy and sell them now. I think I'm supposed to arrest you for having it, but if you'll go home and take it off your hat I'll say no more about it."

"And you can bet a hat," the woman concluded, "that I'll never be caught out with that feather again!"

Actually, of course, the lady was well within the law, and in no real danger of arrest for owning and wearing an eagle feather. The new setup merely bans the commercial importation and sale of wild-bird plumage. Moreover, ladies' hats will not have to go completely featherless after the present stock of wild-bird plumage is liquidated. The new legislation, and the voluntary action of the feather trade, provides for legal traffic in ten species of domesticated birds, ranging from chickens and ducks to ostriches and peacocks. What with the skill of present-day feather workers in trimming and dyeing, the old wild-bird plumage, marketed at the price of so much suffering and death, will hardly be missed.

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BACTERIOLOGY

Bacilli In Soil Prove Deadly Enemies of Many Bacteria

Either of Two Species Found Able to Kill Cultures Of Bacteria of More Than Score of Kinds, Fungi Too

TWO species of bacilli that live in the soil have been found to be deadly enemies of a considerable number of species of bacteria and fungi that cause diseases in plants, animals and man, by Dr. P. A. Ark and Miss Marjorie L. Hunt of the University of California. This adds to the list, only recently started, of germs that kill other germs, in microscopic version of the "bug-eat-bug" struggle that has long been known to go on incessantly in the insect world. (*Science*, April 11.)

One of the two newly recognized germ-killing bacilli has been known for many years as an abundant but apparently harmless dweller in the soil. Bacteriologists call it *Bacillus vulgatus*. The other is a yellow bacillus that has not yet been identified; it may be a species hitherto unknown to science.

Either of the two species has been

proved able to kill cultures of bacteria of more than a score of species, as well as half-a-dozen kinds of disease-causing fungi. These included the diphtheria bacillus, the staphylococcus that causes common boils, the germ of a fatal disease of chickens, the fungus that produces wheat scab, the bacterium of soft rot in vegetables, and many other undesirable citizens of the microscopic world.

The two bacilli do their deadly work by means of substances, of still unknown composition, which they secrete. Dr. Ark and Miss Hunt have already learned, however, that these substances are soluble in water, that they are effective in extremely small amounts, and that they can be boiled for an hour without losing their potency. Further investigations are still in progress.

Science News Letter, July 5, 1941

MEDICINE

Alcohol Only Incidental In Causing Liver Cirrhosis

OLD Man Alcohol was absolved largely, if not completely, from blame as causing cirrhosis of the liver in a report by three government scientists to the Federation of American Societies for Experimental Biology, meeting in Chicago. The scientists are Dr. R. D. Lillie, Dr. F. S. Daft and Dr. W. H. Sebrell, of the National Institute of Health.

Too little protein or maybe too few vitamins in the diet, rather than too much alcohol, is seen as the fundamental cause of the condition.

Rats kept on a diet low in protein foods, which would mean little meat, cheese, eggs and nuts in human diet terms, got cirrhosis of the liver, Dr. Daft reported. When the rats were given 20% alcohol instead of drinking water, the cirrhosis was a little worse and developed a little faster, but the rats got cirrhosis on the poor diet without any alcohol.

Whether it is the small amount of protein in the diet or some other feature of it that caused the cirrhosis is not yet known. The government scientists have a

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whole laboratory full of experiments going and hope soon to have the answer.

The relation, or lack of it, between alcohol and cirrhosis of the liver has puzzled scientists for a long time. More and more clues point to the importance of diet, particularly since lack of vitamins, rather than too much alcohol, has been called responsible for the mental illness that afflicts many chronic alcoholics.

Diffuse nodular cirrhosis of the liver was produced in rats fed very little protein and large amounts of fat, Dr. Harold Blumberg and Dr. Hugh G. Grady, of the Johns Hopkins School of Hygiene and the National Cancer Institute, discovered in experiments they reported.

Liver damage resembling that seen in

human eclampsia, in which the patient has convulsions, developed in rats fed a low fat diet 10% of which was made up of cystine, one of the amino acids that builds protein, Dr. Joseph Victor and Dr. David P. Earle, Jr., of Columbia University College of Physicians and Surgeons reported.

Large amounts of lard or cod liver oil protected the rats against this liver damage, but neither butter, yeast, nor protein did. Drs. Victor and Earle, with Dr. Joseph Post, also investigated the effect of yeast, which is a source of vitamins, on the kind of cirrhosis rats get from carbon tetrachloride. The yeast did not seem to check the liver damage from the carbon tetrachloride.

Science News Letter, July 5, 1941



Unusual Prey

DUCK HAWKS forsaking their normal prey to make their meals off bats is the unusual occurrence reported by Kenneth E. Stager of the Los Angeles Museum.

He observed these bat-eating hawks while he was studying the enormous bat colony that lives in Ney Cave, in Medina County, Texas. While waiting outside the cave entrance one afternoon, he noticed three duck hawks circling about. These were presently joined by three more. The six birds kept diving close to the cave mouth, uttering shrill, fierce cries, Mr. Stager relates.

At about half-past three the bats suddenly erupted out of the cave, pouring upward in a dense stream about 15 feet in diameter. Into this uncountable mass of bats the hawks dived time after time. Apparently they did not single out any particular victims, but just sailed in and grabbed whatever they hit.

Whenever one of the hawks emerged with a dead bat in its talons, it flew around the side of the hill and disappeared for a time, apparently to devour its prey. Then it would reappear and again dive to the attack.

After a time four of the hawks, apparently having satisfied their hunger, flew away. The remaining two kept up their raiding until all the bats in the first flight had emerged from the cave. The first flight lasted about an hour.

After a pause of another hour, a second flight of bats poured out of the cave, even larger than the first. A pair of the hawks reappeared and began to harass the outcoming bats, but in a more or less desultory fashion, as if their appetites were no longer keen. The second flight

ARCHAEOLOGY

Conqueror Mohammed Wrote Poetry As Religious Exercise

His Poems Were Literary Exercises or Word Games Written According to Rule and Without Originality

DISCOVERY in Near Eastern ruins of cities of ancient Jewish synagogues provided with attached living quarters for transients and attendants sheds new light on evolution of synagogue architecture.

The ruins confirm the assumption in ancient literature, that early synagogues had living quarters, Dr. C. H. Kraeling of Yale University reported to the American Oriental Society, meeting in Chicago.

Earliest and most elaborate remains of such a synagogue have been found at the caravan city of Dura in Syria, he stated. This building dates from the third century A.D., and was developed from a private house used as a place of worship. A Christian chapel in Dura also is recognized as a house turned into a church. Fifth century synagogues found

at Stobae and el-Hammeh recently also show provisions for residence, he stated.

That the fierce conqueror Mohammed was a not very original poet who wrote as a religious exercise, was the verdict of Prof. A. H. Lybyer, University of Illinois.

"Under the pseudonym of Avni, the Sultan wrote a group of poems which perhaps reveal no noteworthy poetry of soul, profound insight, or originality of any kind," Prof. Lybyer pointed out. "Rather they are literary exercises according to accepted rules, 'word games' or love poems which are not revelations of intense human feeling, but rather displays of mystical religious symbolism. The verses fit well the portrait of a calm Mohammed who sits looking intently at a rose in his hand."

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of bats lasted until 9:30 at night, but long before that the two lingerers gave up their attacks and flew away.

Before dawn, Mr. Stager stationed himself by the cave mouth to watch the return flight of the bats. Again the hawks appeared, and dashed into the cloud of flying mammals to get their breakfasts.

At no time, apparently, did the bats make any attempt to evade the hawks' attacks. The predations of even half-a-dozen hungry birds made no impression whatever on the innumerable hordes, and even their smashing dives into the column made only momentary disturbances.

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From Page 7

was urged by Dr. H. L. Shantz of the U. S. Forest Service.

The nation's resources were divided by Dr. Shantz into two categories, renewable and non-renewable. The latter are of mainly mineral origin. Some, notably the metals, last a long time and can be reworked several times before they vanish out of circulation. Others, especially coal, oil, natural gas and fertilizer deposits like phosphates and potash, are completely expended the first time they are used. Non-renewable also, the speaker pointed out, are species of plants and animals: once exterminated, they can never return.

Renewable resources include water power, plant products, and animal uses of plant products. These come back in cycles; every year in annual crops, over longer periods in forest products, perennially in water power. These are the things that should be used most freely, and should be substituted for non-renewable resources where that can be done, as in use of plastics for metals.

The soil occupies an intermediate position. If it is permitted to waste itself through erosion, it is strictly a non-renewable resource. If it is properly conserved, it moves into the renewable category.

"Plant cover is most important as a source of energy and as a means for holding the soil," stated Dr. Shantz. "When this cover is gone, it becomes almost impossible to hold the soil. It is doubtful if plowlands can endure permanently, but where there is a closed cover of vegetation the soil is permanently safe."

Science News Letter, July 5, 1941

Suprarenals Affect Heart

HEART diseases, of several different types, are due to abnormal functioning of the suprarenal glands, small

bodies above the kidneys that furnish adrenalin and other hormones necessary for normal functioning of the body but harmful in excess, Dr. William Raab of the University of Vermont medical college told the American Association for the Advancement of Science.

In experiments on rats, Dr. Raab found that the heart muscle seems to have a peculiar affinity for adrenalin and its associated hormones. The animals' hearts absorbed more of these adreno-cortical compounds than did other organs. An overdose, above a certain definite concentration, inevitably resulted in death by heart failure.

Experimental data are backed up by clinical results, the speaker claimed. In the too-common and exceedingly painful heart disease, angina pectoris, it was found that physical exercise resulted in excessive discharges of the hormones into the blood stream, and these in turn provoked typical attacks. In a number of cases, where the glands were partially inactivated by X-ray treatment, these abnormal discharges were abolished for many months, with parallel disappearance of the anginal attacks.

Dr. Raab traced similar apparent connections between abnormal discharges from the suprarenal glands and other types of heart disease, including essential hypertension and congestive heart failure. Assay of the heart muscle, in autopsies of patients who had died of heart failure, showed abnormal amounts of the hormones. Usually these were excessive, but in some cases subnormal concentrations were found.

Summarizing his results, Dr. Raab stated: "It can be said that normal functioning of the heart muscle is dependent on the presence of normal amounts of adreno-cortical (AC) hormones in its tissue. Both abnormal increase and diminution of the myocardial AC are likely to bring about heart failure. Intense AC discharges into the blood stream going on over years and decades stimulate, exhaust, and finally damage the myocardial tissue in a similar manner as they stimulate and ultimately damage the muscular walls of the arteries."

Science News Letter, July 5, 1941

Insects Lured By Scent

CHEMICAL lures may eventually be used as protection for crops, instead of the barrages of poison spray with which plants have to be drenched nowadays. It may become possible to mislead insect pests to lay their eggs in chemically scented traps, instead of on

plants, Dr. V. G. Dethier of John Carroll University suggested.

Dr. Dethier has been experimenting with many kinds of insects and many kinds of chemical compounds found in plants, to get some idea of what induces certain species to lay their eggs on just one or a very few kinds of plants. The cabbage butterfly, which never lays its eggs on anything but the leaves of cabbages and related plants, was attracted by compounds found in just that group of plants. The orange puppy, a troublesome pest of citrus trees, is lured by the scent of two chemicals, citral and methyl-nonyl-ketone. The tent caterpillar has a decided preference for poison in small quantities: it hastened to a bait of hydrocyanic acid and benzaldehyde.

Dr. Dethier demonstrated that insects are guided by their chemical sense by impregnating filter paper with the chemical compounds preferred by various species. Each insect went to the paper scented with its favorite luring odor and proceeded to make a meal of it, despite its lack of other resemblance to leaves and its obvious indigestibility.

Science News Letter, July 5, 1941

VETERINARY MEDICINE

Ticks Suspected Carriers Of Fatal Poultry Disease

TICKS are under indictment for another crime of disease-carrying. This time it is fowl paralysis, a highly fatal disease that wipes out whole flocks of poultry. Researches by J. C. Brown and Prof. J. C. Cross, of Texas College of Arts and Industries, strongly suggest that the carrier is the fowl tick, or "blue bug" as it is familiarly known. (*Science*, May 30.)

It was noticed that chickens in pens infested with "blue bugs" were dying of fowl paralysis at an appalling rate. Thorough cleanup and disinfection of some of the pens was followed by high survival rate. In the infested pens 111 birds out of 120 developed paralysis. In the cleaned-up control pens only one bird out of 126 was stricken.

As a clincher, ticks from an infested hen were ground up and a suspension of their body substance was injected into several chickens. All were attacked by the disease.

Further researches, to find whether there are other possible carriers, are now in progress.

Science News Letter, July 5, 1941

In China, cotton was first grown as a garden plant.

First Glances at New Books

CHEMISTRY

MAGIC IN A BOTTLE—Milton Silverman—*Macmillan*, 332 p., \$2.50. The title of this exciting book comes from the phrase said to have been used by African medicine men who persuaded native patients to allow English physicians battling a meningitis epidemic to use sulfa-pyridine to cure the ailment. The story of the sulfa drugs is, however, only one chapter in this story of scientists who discovered other chemical weapons against disease, ranging from morphine to vitamins.

Science News Letter, July 5, 1941

MATHEMATICS

THE THEORY AND APPLICATIONS OF HARMONIC INTEGRALS—W. V. D. Hodge—*Cambridge (Macmillan)*, 281 p., \$4.50. A mathematical treatise on an important concept.

Science News Letter, July 5, 1941

REFERENCE BOOKS

THE AMERICANA ANNUAL: An Encyclopedia of Current Events, 1941—A. H. McDannald, ed.—*Americana Corporation*, 786 p., illus., \$11. Latest edition of a valuable annual, presenting outstanding developments in history, science, the arts and other branches of knowledge. Besides the customary articles on the states and countries—especially valuable just now—there are approximately 300 biographies of distinguished persons who died or came into prominence during the year 1940.

Science News Letter, July 5, 1941

PHYSICS

ACOUSTICS, A Handbook for Architects and Engineers—Percy L. Marks—*Chemical Pub. Co.*, 143 p., \$3. This book, by an English architect, should prove a useful manual to architects and engineers who are concerned with acoustical problems.

Science News Letter, July 5, 1941

PHYSICS

COLLEGE PHYSICS (Abridged)—Henry A. Perkins—*Prentice-Hall*, 591 p., illus., \$3.50. The abridgment of his larger work (with 200 more pages), Dr. Perkins explains, has been accomplished by eliminating many topics which are not fundamental physics, and thus retaining the good qualities of the original, with its full explanation, to help the student understand. Other passages have been

rewritten, in the interest of clarity or simplification.

Science News Letter, July 5, 1941

ART

HOW TO DRAW HORSES—John Skeaping—*Studio Publications*, 62 p., illus., \$1. The rather complicated anatomy of the horse is first reduced to simple diagrams of action, to teach proper proportions. The numerous sketches in various media show how to produce lively drawings in the simplest possible manner.

Science News Letter, July 5, 1941

ART

HOW TO DRAW PLANES—Frank A. A. Wootton—*Studio Publications*, 64 p., illus., \$1. For boys and girls—or their elders—who are fascinated with modern ships of the air, this little book will open up new fields. Elementary enough for the beginner.

Science News Letter, July 5, 1941

HYGIENE

FUNDAMENTALS OF HEALTH (Rev. ed.)—T. Bruce Kirkpatrick, Alfred F. Huettner and Clara Mae Taylor—*Ginn*, 595 p., illus., \$3.80.

Science News Letter, July 5, 1941

LANGUAGE

AIDS FOR THE SPANISH TEACHER—Lili Heimers, comp.—*Visual Aids Service*, 76 p., 50c. Brief but specific information telling where and how to obtain a wide variety of visual aids and devices for stimulating student interest in Spanish study. Aids include maps, films, marionette plays, on down to really unusual aids such as a glossary of baseball terms in Spanish.

Science News Letter, July 5, 1941

ENGINEERING

HOW TO BE AN ENGINEER—Fred D. McHugh—*McBride*, 187 p., illus., \$2. With interesting text, and numerous excellent illustrations, the work of the engineer is clearly outlined, for the benefit of the boy who hopes to be one.

Science News Letter, July 5, 1941

AERONAUTICS

AIRCRAFT INSTRUMENTS, Their Theory, Function and Use—Orion Edward Patton—*Van Nostrand*, 220 p., illus., \$2.75. Full details about the construction and use of the altimeters, compasses, temperature gauges and tachometers that add to the reliability of aerial travel.

Science News Letter, July 5, 1941

PHILOSOPHY—BIOLOGY

MAN ON HIS NATURE—Sir Charles Sherrington—*Macmillan*, 413 p., \$3.75. A very carefully worked out, thoughtfully written historical treatise on the development of biological thinking, from mid-sixteenth to mid-twentieth century. The author ranges the entire field of man's reflection on his nature—embryology, anatomy, brain and nerve physiology, psychology, contacts with the outside world—and makes a masterly synthesis of the best of recorded thoughts and opinions.

Science News Letter, July 5, 1941

CHEMISTRY

THE ANODIC OXIDATION OF ALUMINIUM AND ITS ALLOYS—A. Jenny; tr. by Winifred Lewis—*Chemical Pub. Co.*, 231 p., \$6.50. The original monograph prepared by the director of the Siemens and Halske Laboratories in Germany, this translation has been prepared by a member of the staff of the "Intelligence Department" of the British Aluminium Co., Ltd.! It deals with the electrolytic and chemical production of protective surface films on aluminum and its alloys, which is a process extensively used in aircraft construction.

Science News Letter, July 5, 1941

ENGINEERING

RELAXATION METHODS IN ENGINEERING SCIENCE, A Treatise on Approximate Computation—R. V. Southwell—*Oxford Univ. Press*, 252 p., \$5. A part of the Oxford Engineering Science Series, this treatise, in the greater part, relates to problems confronted in the theory of elasticity. But the method is shown to have wider application, and such problems as the determination of currents and potentials in electrical networks are also considered.

Science News Letter, July 5, 1941

GEOGRAPHY

MONGOL JOURNEYS—Owen Lattimore—*Doubleday, Doran*, 324 p., illus., \$4. Resisting the Japanese, says Dr. Lattimore, Mongols and Chinese now have an interest in common. And furthermore, Mongol and Chinese economy naturally complement one another. The land and people described are seen through the eyes of a geographer very much at home in the East. A high point of the narrative is Dr. Lattimore's attendance at the sacrifice festival of Jenghis Khan and the viewing of the supposed coffin of the Mongol conqueror.

Science News Letter, July 5, 1941